CLAIMS

1. A method for presenting an analyte of a liquid sample as an MS-analyte to a mass spectrometer, **characterized**

(a) in comprising the steps of:

(i) applying a liquid sample containing the analyte to a sample inlet port of a microchannel structure of a microfluidic device, said structure also comprising an outlet port (MS-port) that is capable of being interfaced with a mass spectrometer,

(ii) passing the analyte to the MS-port thereby transforming it to an MS-analyte, and

(iii) presenting the MS-analyte to mass spectrometer via the MS-port, and

(b) in inertia force being used for liquid transportation within at least a part of said microchannel structure.

2. The method of claim 1, **characterized** in that the inertia force is centrifugal force.

3. The method of claim 1, **characterized** in that

(a) the device is a planar, preferably circular, substrate (plate, disc), and contains the microchannel structure which extends radially in the plane of the plate with the MS-port being located at an outer position and an inlet port at an inner position, and

(b) said planar substrate after or simultaneously with the application of the sample is spinned around its central axis which is perpendicular to said plane thereby forcing liquids present in the microchannel structure to move outwards, e.g. in the direction of the MS-port.

4. The method of claims 1 or 3, **characterized** in that there are two or more, preferably a plurality of microchannel structures.

5. The method of claim 4, **characterized** in that there is a plurality of microchannel structures that are annularly arranged around the central axis.

6. The method of claim 1, **characterized** in that the MS-port comprises an electrospray arrangement, with preference for all of the MS-ports comprising this arrangement.

7. The method of claim 1, **characterized** in that the MS-port comprises an EDI arrangement with an EDI area, for instance an IDI arrangement such as an LDI arrangement.

8. The method of claim 7, **characterized** in that each EDI area comprises a conducting layer (layer I), for instance a metal layer, with a conductive connection.

9. The method of claim 8, **characterized** in that there are two or more EDI areas on the device and that layer I in at least two of said EDI areas, preferably all of them, are present in a common continuous conducting layer comprising the connection for electricity.

10. The method of claim 8 or 9, **characterized** in that there is a layer (II) of non-conducting material on top of layer (I) in an EDI area, preferably in each of them.

11. The method of claim 10, **characterized** in that the layer (I) or layer (II) is exposed on the surface of an EDI area, preferably in each of them.

12. The method of claim 7, **characterized** in the microfluidic device comprises

(a) a planar substrate having in the surface of one side at least a part of said microchannel structure, and

(b) a matching lid which on one side comprises the remaining parts, if any, of the microchannel structure so that said microchannel structure is completed when said two sides mate to each other, the part of the MS-port comprising the EDI area being present either in the substrate or in the lid.

13. The method of claim 12, **characterized** in that said substrate and said lid are separable from each other.

14. The method of claim 1, **characterized** in that said MS-port comprises an opening permitting release of the MS-analytes into the mass spectrometer.

15. The method of claim 1, **characterized**

(a) in that the microchannel structure comprises a zone downstream the inlet port and upstream the MS-port, which zone comprises a separation medium which is capable of selectively capturing the analyte or possibly an analyte-derived entity when a liquid containing one of these components is allowed to pass through the zone, and

(b) in that the analyte or the analyte-derived entity is captured in the zone and then released by application of a releasing liquid to an inlet port that may be different from the sample inlet port and transported, preferably by inertia force, to the MS-port where the analyte or the analyte-derived entity is collected, and subsequently released as an MS-analyte to the mass spectrometer.

16. The method of claim 15, **characterized** in that the separation medium comprises ligand structures that are capable of binding to the analyte or an analyte derived entity by affinity or reversible covalent bonds.

17. The method of claim 16, **characterized** in that the outlet port contains an EDI area, and that an EDI matrix (a) is included in the releasing liquid either befoere or after passing the separation medium, or in the MALDI area before release of the analyte or the analyte-derived entity, or (b) applied to the MALDI area after the analyte or the analyte-derived entity has been collected thereon.

18. The method of claim 1, **characterized** in that said sample inlet port and said MS-port coincide, and that the transport of liquid is out from the combined port via the microchannel structure of the device.

19. The method of claim 18, **characterized** in that said combined port comprises a separation medium selectively binding to the analyte under the condition provided by the liquid sample and that the analyte or possibly an analyte-derived form thereof is released as the MS-analyte to the mass spectrometer.

20. A microfluidic device as defined claims 3 or 12.